

Branch of Research - U. S. Forest Service
Department of Agriculture



AN EIGHT-YEAR PROGRESS REPORT
of the
CENTRAL STATES FOREST EXPERIMENT STATION*
1927-1935.

INTERMOUNTAIN STATION

Central Reference File

By Willis M. Baker, Director.
September 1, 1935.

No. 0.73

The Central Hardwood Region lies within the central drainage basin of the Mississippi river and extends from Ohio west through Iowa and south through western Tennessee and northern Arkansas. It includes the level to rolling region of farm woodlands within the Corn Belt and the rough, more heavily forested hill-lands in the unglaciated section bordering and south of the Ohio and Missouri rivers. The area still remaining in forest totals nearly 55 million acres, and normally produces over 30 per cent of the nation's hardwood timber, or 14 per cent of the total timber production of the country. In addition, there are more than 15 million acres of submarginal, eroding lands no longer fit for agriculture, much of which should be reforested to protect the public's interests in essential land and water resources. From the standpoint of timber production, land utilization, regulation of streamflow, underground water supplies, erosion control, wild life conservation, and potential recreational development, the Central Hardwoods constitute one of the important forest regions, in which the restoration of productive forests and protective forest cover is of major concern to the people of the United States.

Progress in Forestry. Ever since the earliest settlement of the Central States our citizens have been so thoroughly engrossed with agricultural and industrial development that too little attention has been devoted to the problems of conservation arising from land abuse and exploitation of natural resources. Within the last few years, however, drastic economic changes have forced recognition of the results of past policies, and have led to definite, constructive action.

The recently expanded nation-wide program of conservation, designed to restore and perpetuate the essentials of basic natural wealth, has brought to the Central Hardwood region a great increase in effort to conserve forests and the resources of timber, water, soil, and wild life which forests produce or protect. Wilderness and non-agricultural areas are being acquired for public forests, parks, game refuges, and for other purposes in the interest of public welfare. New units of National Forests are being developed in Ohio, Kentucky, Indiana, Illinois, Iowa, and Missouri. Civilian

*The Central States Forest Experiment Station is maintained by the U. S. Forest Service at 168 - 14th Avenue, Columbus, Ohio, in cooperation with Ohio State University and the Ohio Agricultural Experiment Station.

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Conservation Corps camps have been established to undertake constructive work throughout the region. Public and private agencies are cooperating to end forest devastation in privately owned woodlands, and to bring about sustained timber production and operation. The need for coordination of these conservation measures, and their relationship to our economic and social structure, are being recognized through regional land use studies. At last forestry gives promise of being undertaken on a scale commensurate with its importance to our national prosperity.

Increasing Need for Research. This sudden development of conservation work carries with it a greatly increased need for knowledge and information of all kinds. It is essential that the agencies responsible for various projects know the facts of the situation with which they are dealing, the best methods to use, and the results that may be expected. The problem of restoring and maintaining forest productivity and permanent forest industries under sustained timber yield and operation requires information regarding wood consumption, tree growth, and timber yield under various conditions in different parts of the region; methods of conservative cutting, logging, and utilization; forest regeneration by natural reproduction and by planting trees. More information is needed regarding the protection of forests from fire, insects, disease, and excessive grazing of livestock. There is a lack of definite knowledge of the relation of soil and site conditions to forest establishment and growth, and of the influence of forest cover on water absorption, run-off, and soil erosion. The multiple-use management of forest lands in the public interest for timber production, for the conservation of water, soil and wild life, and for public recreation is a land use measure that involves all kinds of economic, political, and social relationships, concerning which more information is urgently needed. If costly mistakes are to be avoided, information must be secured and made available without delay to the agencies that need it. The need for more forest research in the Central States, established on the sound, permanent basis essential to any worth-while program, is very obvious.

THE CENTRAL STATES FOREST EXPERIMENT STATION

Establishment. To help secure the knowledge and facts needed for the advancement of forestry in this region is the function of the Central States Forest Experiment Station, one of the twelve regional Stations organized in the Branch of Research, U. S. Forest Service. The Station was created by act of Congress in 1926; in 1927 funds were provided, and the Station's headquarters were established at Columbus, Ohio in cooperation with the Ohio State University and the Ohio Agricultural Experiment Station.

It is the policy of this Station to undertake the solution of those problems which are most urgent, and to cooperate helpfully with the various local agencies and organizations concerned with forestry and conservation. Since the outstanding problems are region-wide in scope, this combined regional attack is most economical and efficient. The Station serves the eight states of the Central Hardwood region: Ohio, Indiana, Illinois, Iowa, Missouri, western Kentucky, western Tennessee, and northern Arkansas. This is a large territory to cover adequately, and the resources of the Station have been small, but in the eight years of its existence it has accomplished certain results, a brief summary of which may lead to an appreciation of the problems of the region.

Organization. Until recently the Station headquarters have been maintained in Rooms 208-209 of the Horticulture and Forestry building on the campus of Ohio State University. In September, 1935 the University withdrew this cooperation because of crowded conditions and lack of available space, and new quarters have been leased by the Station at 168 E. 14th Ave., one long block east of the Campus.

On September 1, 1935, the staff consisted of 8 persons under regular appointment, 9 under emergency appointment, and 2 part-time employees. In addition, 25 C.C.C. enrollees and 30 employees from the work relief rolls are employed on the Station's experimental forest areas in Arkansas, Illinois, and Ohio.

The development of field stations and experimental forests in various parts of the region is discussed later on in this report.

Extensive Investigations and Cooperative Projects. Up to the present time the Station's work has consisted largely of region-wide surveys of forest conditions, and of investigative projects extensive rather than intensive in scope. This has been due in part to the usual requirements of preliminary work in a new region, and also to urgent demands for special information such as that required for the Mississippi flood report of 1927-28, the extensive revision of forest statistics of 1931, and the comprehensive Copeland report of 1932 dealing with a national plan for American forestry. These reports have provided an excellent opportunity for bringing to attention the critical forest problems of the Central States which formerly were not generally recognized. Since 1933 a very large part of the Station's effort has been devoted to various emergency activities dealing with unemployment relief, regional conservation projects, application and operation of woods practices under the lumber code, and land use planning. A member of the staff served as E.C.W. liaison officer for the Fifth Corps Area until relieved in July, 1934, by the appointment of a full-time officer. From November, 1933 to July, 1935, a period of 20 months, approximately 200 extra employees have been given more than 8,800 man-days' work with unemployment relief funds allotted to the Station. Members of the staff have participated in national, regional, and local conferences during this period when emergency plans have been developed, and have cooperated with various agencies in putting these plans into operation.

Research Projects. Participation in these extensive and emergency projects has been decidedly worth while, and helpful contributions have been made to the general progress of forestry in the region, but necessarily at the sacrifice of the regular research projects. The forestry problems requiring investigation are so numerous, and the resources of the Station devoted directly to their solution have been so inadequate, that only a mere beginning has been made in obtaining the information essential to successful forestry practice in the Central States.

In the field of forest management, major emphasis has so far been devoted to the problems arising from livestock grazing in the farm woods of the Corn Belt. Several projects dealing with grazing damage and livestock carrying capacity of farmwoods, natural regeneration following

removal of livestock, and methods of cutting are being carried on, chiefly in Indiana, in cooperation with the Purdue Agricultural Experiment Station. A comprehensive study of yellow poplar has been concluded and the report published. Preliminary studies have been made of the forest types of the region; growth, volume, and yield data of the oaks and associated species have been gathered in cooperation with the Appalachian and Allegheny Stations, and the final report is now being prepared for publication by the latter. Within the past year growth and stand improvement studies have been started in the upland oak and pine types found in the southern (unglaci-ated) portions of the Central Hardwood region. As experimental forest areas are acquired for the permanent use of the Station, it will become possible to begin more intensive studies of forest management.

Because of the lack of permanent experimental areas, most of the re-forestation studies have been confined to existing plantations. Growth, volume, and yield data have been secured from the older plantations of black walnut and black locust; observations and records have been made of the success of establishment and growth of a large number of plantings of various species throughout the Central States. In 1934 a survey was made of all known forest plantations in the southern, unglaci-ated portions of the region to appraise and evaluate past and present planting practices, to bring to light the outstanding planting problems, and to determine those species which hold the greatest promise for successful use in the greatly expanded reforestation program. Within the past year experimental plantings and studies of native tree seeds and nursery practice have been started, and will be expanded as rapidly as funds are made available for this necessary work.

Studies of forest soils have been made in plantations of black walnut and black locust to determine those factors of site which exert important influence of the growth of those species. Observations have been made of the physical and chemical changes which take place in soil when forest cover is removed by excessive cutting, grazing, or fire, and when cleared land is subjected to exhaustive cropping and erosion. As rapidly as the Station's resources permit, soil studies are being correlated with the various phases of silvical research involved in reforestation and forest management investigations. Forest influence studies have been started to determine the effect of forest cover and litter on the density, porosity, and water absorption capacity of soils under various conditions. More funds for studies of forest influences, especially in relation to soil erosion, water run-off, and streamflow are urgently needed.

Since 1931 forest insect investigations have been carried on at the Station by the Bureau of Entomology and Plant Quarantine. The major effort so far has been to determine practical measures for controlling the destructive locust borer, an insect which severely injures or kills black locust. With the greatly increased planting of this species for erosion control, a very severe infestation of locust borers may be expected in the Central States within a few years unless effective measures of prevention and control are worked out and used extensively. Other destructive forest insect pests, such as the pine tip moth, the white grub, the locust twig borer, and acorn insects have been observed and studied in a preliminary way, but funds have not been available for comprehensive investigations leading to their control.

Publications and Reports. A list of some eighty printed publications, articles, and mimeographs, prepared by the staff of the Station since 1928 is available for distribution. By referring to this list, the reader may get an idea of the kinds of information that the Station has been able to disseminate within the last few years, as a result of its studies and investigations. The details of each year's work are recorded in the annual investigative reports, copies of which are distributed to interested agencies and individuals throughout the region, and to others upon request.

Experimental Forests and Field Stations. Much of the information needed by foresters and forest owners in the Central States can be secured only from intensive studies carried on without interruption over a period of time on areas segregated for the exclusive use of research. During the early years of the Station's establishment much extensive and exploratory work was necessary, and no areas for intensive research were secured. Now, with the establishment of new National Forest units in each of the Central States, the Station has been given not only the opportunity, but the obligation, to establish permanent experimental areas and field stations where more intensive work may be undertaken. Much of this will have direct and immediate application to the management of surrounding forest lands owned by federal, state, and private agencies.

With the allotment of unemployment relief funds for improvements and construction, 1934 witnessed the establishment and partial development of several experimental areas and field stations. The Sylamore Experimental Forest of 2,800 acres, located on the Ozark National Forest in northcentral Arkansas, was set aside permanently and improved for the experimental use of the Station by the construction of roads, fire-breaks, and several small buildings with water, sanitation, and telephone systems installed. A similar area was selected and partly developed on the newly acquired Shawnee National Forest unit in southeastern Illinois. Two small experimental areas have been set aside for use of the Station under agreements with the State Foresters of Indiana and Ohio, and have been developed to some extent with their cooperation. These two areas are located respectively on the Morgan-Monroe State Forest south of Martinsville, Indiana, and on the Shawnee State Forest west of Portsmouth, Ohio.

The location of a larger experimental forest has been tentatively selected on a National Forest purchase unit in southern Ohio, and another is contemplated for the Ozark region of southern Missouri. Eventually there should also be field stations located in western Tennessee or Kentucky and in eastern Iowa. With the ultimate development of these experimental areas representative of the outstanding forestry problems of the region, with branch station facilities and improvements adequate for efficient work, and with sufficient personnel and funds to utilize them thoroughly and economically, the Station will be able to conduct the investigations necessary to provide information essential to successful forestry in the Central States.